

Patent Claims:

1. Method of determining the vehicle reference speed of an all-wheel-drive vehicle, wherein the vehicle reference speed is determined from one or more wheel speeds, characterized by the following steps:
 - determination of a vehicle acceleration from the vehicle reference speed and/or from one or more wheel speeds,
 - determination of a drive torque and/or measurement of the vehicle acceleration with a sensor,
 - comparative analysis of the determined vehicle acceleration and the drive torque and/or the measured vehicle acceleration, and
 - modification of the vehicle reference speed in dependence on the comparative analysis.
2. Method as claimed in claim 1, characterized in that a tabulated acceleration is read from a table in the comparative analysis based on the drive torque, and is compared with the determined acceleration.
3. Method as claimed in claim 2, characterized in that the table contains rising tabulated accelerations for rising drive torques, but may contain comparatively high tabulated accelerations for very low drive torques and/or for drag torques.

4. Method as claimed in claim 2 or claim 3,
c h a r a c t e r i z e d in that the drive torque is the engine output torque, and in that the reading out from the table is also effected based on the gear step.
5. Method as claimed in claim 4,
c h a r a c t e r i z e d in that the table for higher gear steps contains lower tabulated accelerations.
6. Method as claimed in any one of claims 2 to 5,
c h a r a c t e r i z e d in that the vehicle reference speed is modified when the determined acceleration is higher than the tabulated acceleration.
7. Method as claimed in any one of the preceding claims,
c h a r a c t e r i z e d in that in the modification operation, the vehicle reference speed is extrapolated with the tabulated acceleration or an acceleration measured by a sensor.
8. Method as claimed in any one of the preceding claims,
c h a r a c t e r i z e d in that the method is implemented in a vehicle equipped with a center clutch that can be influenced.
9. Method of detecting an incorrect vehicle reference speed of an all-wheel-drive vehicle, wherein the vehicle reference speed is determined from one or more wheel speeds and/or is extrapolated by way of given values,
c h a r a c t e r i z e d in that

one or more wheels are decoupled from the drive and the detection is effected with reference to the running behavior of the decoupled wheel(s).

10. Method as claimed in claim 9,
c h a r a c t e r i z e d in that decoupling is effected in dependence on the driving situation of the vehicle.
11. Method as claimed in claim 10,
c h a r a c t e r i z e d in that several of the following criteria can be polled to detect the driving situation:
 - activation of a traction slip control operation,
 - extrapolation of the vehicle reference speed,
 - drive torque and/or measured vehicle acceleration,
 - one or more wheels exhibit traction slip,
 - type of influencing of drive torque by a traction slip control operation,
 - stability of the running behavior of the wheels,
 - comparison of one or more wheel speeds with the vehicle reference speed.
12. Method as claimed in claim 9 or 10,
c h a r a c t e r i z e d in that decoupling lasts less than 2 seconds.
13. Method as claimed in any one of claims 9 to 12,
c h a r a c t e r i z e d in that in the detection operation, reference is made to the running behavior of the decoupled wheels after decoupling.

14. Method as claimed in claim 13,
c h a r a c t e r i z e d in that the gradient of the rotational speed of the decoupled wheels is examined.
15. Method as claimed in claim 14,
c h a r a c t e r i z e d in that detection of an incorrect vehicle reference speed is confirmed when the gradient is more negative than a negative threshold value.
16. Method as claimed in any one of claims 1 to 8,
c h a r a c t e r i z e d in that when the reference speed is modified during a defined duration, it is checked with a method as claimed in any one of claims 9 to 14.
17. Method as claimed in claim 16,
c h a r a c t e r i z e d in that when detection of an incorrect vehicle reference speed is confirmed, the latter reference speed is determined with reference to the running behavior of the decoupled wheel(s).
18. Device (20) for determining the vehicle reference speed of an all-wheel-drive vehicle, comprising a first determination system (21) for determining the vehicle reference speed from one or more wheel speeds,
c h a r a c t e r i z e d by
 - a second determination system (22) for determining a vehicle acceleration from the vehicle reference speed and/or from one or more wheel speeds,
 - a third determination system (23) for determining a drive torque,

- a comparison system (24, 25) for a comparative analysis of the determined vehicle acceleration and the drive torque, and
 - a modification system (26) for modifying the vehicle reference speed in dependence on the comparative analysis.
19. Device as claimed in claim 18,
c h a r a c t e r i z e d by a memory (24) for storing a table, wherein a tabulated acceleration is read from the table in the comparative analysis based on the drive torque, and is compared with the determined acceleration in a comparator (25) of the comparison system.
20. Device as claimed in claim 18 or 19,
c h a r a c t e r i z e d in that the device is implemented in a vehicle equipped with a center clutch that can be influenced.
21. Device for detecting an incorrect vehicle reference speed of an all-wheel-drive vehicle, comprising a system (40) which determines the vehicle reference speed from one or more wheel speeds and/or extrapolates it by way of given values,
c h a r a c t e r i z e d by
- a decoupling system (41 - 43) which causes the decoupling of one or more wheels from the drive, and
- a detection system (44) for detecting an incorrect vehicle reference speed with reference to the running behavior of the decoupled wheel(s).

22. Method as claimed in claim 21,
c h a r a c t e r i z e d by a checking system (42) for
checking the driving situation of the vehicle.
23. Method as claimed in claim 21 or 22,
c h a r a c t e r i z e d in that the detection system
(44) includes a gradient calculation system for the
calculation of the gradient of the rotational speed of the
decoupled wheels.